# T15D09 – (Part 15.1) ****Standard Enthalpy Changes of Reactions****

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 15.1.1 Define and apply the terms standard state, standard enthalpy change of formation   
   ΔHƟf and standard enthalpy change of combustion ΔHƟc. (2)
   1. Define standard enthalpy of formation:
   2. What is the standard state?
      1. Example using AgBr
      2. Example using CH4
      3. Example using O2
      4. What are two NON examples for AgBr (note why they are not correct)
   3. What is the enthalpy of combustion?
      1. Give example equations for CH4 and CH3CH2OH
   4. Generally values for enthalpies of formation are \_\_\_\_\_\_\_\_ and a couple exceptions are:
2. 15.1.2 Determine the enthalpy change of a reaction using standard enthalpy changes of formation and   
   combustion. (3)
   1. What is the equation for the standard enthalpy of reaction?
   2. Calculate the enthalpy change of the equation 3 CuO (s) + 2 Al (s) 🡪 3 Cu (s) + Al2O3 (s) Given:
      1. ΔHƟf [CuO] = -155
      2. ΔHƟf [Al2O3] = -1669
   3. Calculate the enthalpy change of reaction for the hydrogenation of propene to form propane CH3-CH=CH2 (g) + H2 (g) 🡪 CH3-CH2-CH3 (g) Given:
      1. ΔHƟc [C3H6 (g)] = -2509
      2. ΔHƟc [H2 (g)] = -286
      3. ΔHƟc [C3H8 (g)] = -2220
   4. What is the enthalpy of atomization, give two equations:
      1. ΔHƟat of noble gases are always \_\_\_\_\_\_
      2. ΔHƟat have what value, positive or negative?
      3. ΔHƟat is found by
   5. For physical changes, enthalpy can be found between two transitions, define each
      1. Standard enthalpy of fusion
      2. Standard enthalpy of vaporization
      3. When calculating heat change of a phase change, there is no change in temperature, explain how boiling water would give a value of zero for q=mcΔT. What equation could you use to solve for heat change during this process?
      4. If ice (H2O(s)) at -25oc is heated to water vapor (H2O(g)) at 125oc, the following phase change occurs….